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FOREST STATISTICS
FOR HANCOCK COUNTY, MAINE

*Northeastern
Forest Experiment Station
Upper Darby, Pa.
V.L. Harper, Director*



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This is the fourth in a series of Forest Survey statistical releases published by the Northeastern Forest Experiment Station. The prior releases in this series are:

- No. 1 - Forest Resources of Elk, Forest, McKean, and Warren Counties, Pennsylvania.
- No. 2 - Forest Statistics for Pendleton, Pocahontas, and Randolph Counties, West Virginia.
- No. 3 - Forest Statistics for Northern New Hampshire.

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FOREWORD

This release presents statistics on forest area and timber volumes for Hancock County, Maine. Five statistical tables on forest area and thirteen on timber volumes are included. These tables are followed by a brief description of Forest Survey procedure and estimates of the accuracy of forest area and timber volume figures. Because many of the terms used in this release have special meanings, an explanation of the terms used may be found at the end of the report.

This report was prepared by the Forest Survey organization at the Northeastern Forest Experiment Station under the direction of Frank A. Ineson, assisted by Harry W. Camp, Jr., in charge of inventory; Roland H. Ferguson, in charge of compilations; and George B. P. Mullin, field supervisor. Field inventory work in Hancock County was completed in February 1947. Supplemental surveys to obtain data for volume tables and on forest land ownership were completed in September 1948. Field work was conducted by Alessio Caporaso, Ted Grisez, Joseph Mendel, and John Zerbe.

Similar reports will be issued for other counties or county groups within each State as the field work progresses and the statistics are compiled. After an entire State is covered in this manner, a statistical report for the State as a whole will be issued, presenting the findings of the Forest Survey on forest area, timber volume, growth, and commodity drain. Later, a comprehensive report analyzing the current and prospective forest situation for the State will be published.

The Forest Survey is conducted in the various forest regions by the forest experiment stations of the Forest Service. The project in the Northeast is directed by the Northeastern Forest Experiment Station with central headquarters in Upper Darby, Pennsylvania.

The Station wishes to express its appreciation for the aerial photographs provided by the State of Maine Forest Service and the Bureau of Taxation, and several large landowners. The cooperation of the many individuals who in various ways facilitated the forest survey is appreciated.

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MAINE

HANCOCK



County covered by
this report

SCALE

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FOREST STATISTICS FOR
HANCOCK COUNTY, MAINE

compiled by

Forest Survey Staff
Northeastern Forest Experiment Station

SALIENT STATISTICS

Hancock County is one of the coastal counties of southeastern Maine. It is noted primarily for the resort town of Bar Harbor and for the Acadia National Park, both located on Mount Desert Island.

The topography of this area is rolling, with a few hills rising more than a thousand feet above sea level. The tallest is Cadillac Mountain on Mount Desert Island; it rises to 1,530 feet. Much of the forest land, especially in the southern portion, is strewn with boulders. In addition to having a large area of coastal waters between the many islands and the mainland, Hancock County abounds with lakes. The Penobscot River forms the southwest border of the county; the Union River and other minor streams flow into the coastal bays. The gross land area of the county is 986,900 acres, of which 797,600 acres or 81 percent is forested.

The French first settled on Mount Desert Island between 1611 and 1613, and permanent settlement began in the 18th century. The first sawmill was established in 1776. In 1940 the county had a population of 32,422, of which 88 percent were classified as rural. Ellsworth, the county seat, had a population of 3,911. Practically all of the people live in the southern half of the county, which is served by an adequate transportation system. The northern half of the county is largely unsettled and has few roads.

The principal sources of income are recreation services, forest-products industries, and commercial fishing. Although Bar Harbor is the leading summer resort town, there is considerable recreational development on the islands and along the coast. In 1943 there were 38 sawmills, 3 turneries, 3 bolt mills, 1 cooperage plant, 1 pulp and paper mill, and 2 shingle mills in the county. In 1942 these plants produced 70.5 million board feet of products. ^{1/}

^{1/} Baker, Gregory. The primary wood using industries of Hancock County for the year 1942. Univ. Maine Misc. Pub. 582. 12 pp., illus. Orono. 1944

Forest-land ownership.--Forest-land ownership in Hancock County is largely private. Publicly owned forest land consists of 24,400 acres in the Acadia National Park, 5,800 acres in a State bombing range, and 100 acres held by the University of Maine. All of these areas, totaling 30,300 acres, are withdrawn from commercial timber cutting. There is an additional 14,100 acres of forest land classed as noncommercial because of low potential productivity. The remaining commercial forest land, 753,200 acres, is entirely in private ownership. Small ownerships, including farm woodlands, are characteristic of the coastal portions of the county. The remainder of the county is generally in large ownerships.

Forest type groups 2/.-- The forest types of this county have been combined into five principal forest type groups, namely, white pine, spruce-fir, cedar-tamarack-spruce, aspen-paper birch, and hardwood. The spruce-fir types cover more than 46 percent of the commercial forest area. These types are dominated by red spruce, black spruce, or balsam fir, singly or in combination, and are found throughout the county. Principal associate species are paper birch, red maple, and northern white-cedar. Some mixed spruce-fir-hardwood stands are included.

The hardwood types, which account for 22 percent of the commercial forest area, are generally interspersed with the spruce-fir types except in the southern portion of the county. Although beech has been heavily attacked by beech scale and necrotia and subjected to considerable heart rot, it is still the principal species in respect to volume in most of the northern hardwood stands. Yellow birch, red maple, sugar maple, and paper birch are the principal associate species. Considerable mortality of both beech and birch has taken place in recent years.

The aspen and paper birch types generally occur on burns and clear-cut areas. They cover about 16 percent of the commercial forest area. Red maple is frequently found with the aspen and paper birch. The cedar-tamarack-spruce type that is found generally in swamps covers about 11 percent of the commercial forest area. Balsam fir and red maple are often associated with northern white-cedar and red or black spruce. Some tamarack also is found in these swamps.

Although white pine only occasionally occurs in pure stands in this county, it is the predominant species on about 5 percent of the commercial forest area. Small patches of white pine and of white pine-hardwood are found in all sections.

2/ Detailed forest type maps of each quadrangle of Hancock County are available. Prints may be obtained from the U. S. Forest Service, Division of Engineering, Washington, D. C. Blueline prints 28 cents each. VanDyke prints 40 cents each. Check, postal or money order or draft made out to the Treasurer of the United States should accompany an order.

Site quality, or the productive capacity of the forest soils, on which the various forest types are found, was estimated from the number of logs that could be produced by mature trees. Nearly 88 percent of the area is capable of producing hardwood saw-timber trees with one and one-half to three 16-foot logs, or softwood saw-timber trees with three to five logs. Less than 1 percent of the commercial forest area is classified as more productive than this; 11 percent as less productive but capable of producing trees with at least one 8-foot log.

Stand-size classes.--The early settlement of the county resulted in frequent cutting of the forests along the coast. The stands inland also have been cut over in the course of large-scale operations.

Saw-timber stands, containing 1,500 board feet or more per acre, make up 39 percent of the commercial forest area. Most of these stands are classified as light saw-timber, ranging up to 5,000 board feet per acre and averaging 2,930 board feet. The sawlog material in these stands would make about 6.2 cords per acre and there are in addition some 11.6 cords in the tops of saw-timber trees, in pole-timber trees, and in cull trees.

About 46 percent of the commercial forest area is in pole-timber stands, 9 percent in well-stocked seedling and sapling stands, and 6 percent in poorly stocked stands and unstocked areas. The pole-timber stands range from about $2\frac{1}{2}$ cords up to over 15 cords per acre. They contain a little over 1 cord of sawlog material on the average and nearly 10 cords of other material.

Sawlog volume.--The volume of sawlog material in all stands amounts to 1,529,100,000 board feet. About 45 percent of this is located in medium and heavy saw-timber stands containing 5,000 or more board feet per acre, and 40 percent of it is in light saw-timber stands. The remainder is scattered throughout the pole-timber stands or is in residual trees in seedling and sapling or poorly stocked stands.

Softwoods account for 79 percent of the sawlog volume, the principal species being spruce, white pine, and hemlock. Five hardwood species--paper birch, yellow birch, red maple, beech, and sugar maple--each account for from 15 to 20 percent of the hardwood volume.

All sawlog volumes shown in the tables are net; deductions have been made for rot, crook, and other defects. No sawlog volume is included for cull trees. The average proportion of cull for sawlog material in merchantable softwood saw-timber trees is about 4 percent; for hardwood saw-timber trees 13 percent.

Volume in cords.--The total volume of material in all trees 5.0 inches and larger amounts to 10,206,000 standard cords. Nearly half of this volume is in trees ranging from 5.0 to 8.9 inches d.b.h., about

one-quarter in trees ranging from 9.0 to 12.9 inches, and the remaining quarter in trees 13.0 inches and larger. The distribution of the volume in cords in trees of various sizes is approximately the same for softwoods and for hardwoods.

Softwoods make up 5,820,000 cords or 57 percent of this volume. Spruce accounts for nearly 40 percent of the softwood volume. Other important softwoods are balsam fir, white pine, and northern white-cedar. Hardwoods account for 4,386,000 cords or 43 percent. The principal hardwood species are paper birch, red maple, beech, and yellow birch.

The pulp and paper industry is today the most important customer for the timber products of Hancock County. It is primarily interested in the availability of raw material for its pulp mills. Based on an analysis of the data from 1/5-acre ground plots, the distribution of the forest area in the spruce-fir types by cord-per-acre classes for all materials is as follows:

Cord-per-acre class	Spruce-fir type	Cedar-tamarack- spruce type
	<u>Acres</u>	<u>Acres</u>
Less than 8 cords	82,300	30,300
8 to 15 cords	132,000	38,400
16 cords and over	138,400	15,700
All stands	352,700	84,400

The volume in many of these stands is too little or the stands too scattered to be operable at present. Nearly half of this volume is in small trees (5.0 to 8.9 inches d.b.h.) and an additional one-fifth is in the upper stems and limbs of saw-timber trees or in cull trees.

Cubic-foot volume.--The total solid wood content of all trees 5.0 inches and larger amounts to 739,100,000 cubic feet. Half of this volume is in pole-timber trees, about a third in sawlog material, and less than one-tenth each in cull trees and in the upper stems and limbs of saw-timber trees.

Bar Harbor Fire.--Unfortunately, in the fall of 1947, Mount Desert Island was scourged by a devastating forest fire that raged over some 17,200 acres. In addition to destruction of timber, this fire destroyed many homes in and around Bar Harbor. A little over one-half of the area burned was inside the Acadia National Park that is not included in the commercial forest area. The remainder of the area burned was commercial forest land adjacent to the park in private ownership. Much of this land has been cut over in recent years. No deductions in timber volume were made to account for timber killed by the fire on commercial forest area.

HANCOCK COUNTY, MAINE

Table 1.--Commercial and noncommercial forest area, 1947

Kind of land	Land area	
	<u>Acres</u>	<u>Percent</u>
Forest:		
Commercial	753,200	76.3
Noncommercial:		
Reserved productive	30,300	3.1
Nonproductive	14,100	1.4
Total noncommercial	44,400	4.5
Total forest	797,600	80.8
Nonforest	189,300	19.2
All land ^{1/}	986,900	100.0

^{1/} From Areas of the United States, 1940, Bureau of the Census.

HANCOCK COUNTY, MAINE

Table 2.--Commercial forest area by ownership class, 1947

Ownership class	Commercial forest area	
	<u>Acres</u>	<u>Percent</u>
Federal	--	--
State, county, and municipal	--	--
Private:		
Farm woodland ^{1/}	106,500	14.1
Other	646,700	85.9
Total private	753,200	100.0
All ownerships	753,200	100.0

^{1/} Census of Agriculture: 1945.

HANCOCK COUNTY, MAINE

Table 3.--Commercial forest area by forest type, 1947

Forest type	Area	
	Acres	Percent
White pine:		
White pine	25,800	3.4
White pine-hardwood	11,100	1.5
Total	36,900	4.9
Spruce-fir:		
Spruce-fir	284,400	37.7
Spruce-fir-hardwood	68,300	9.1
Total	352,700	46.8
Cedar-tamarack-spruce	84,400	11.2
Aspen-paper birch:		
Aspen	86,800	11.5
Paper birch	30,500	4.1
Total	117,300	15.6
Hardwood:		
Northern hardwood	88,900	11.8
Hardwood-white pine	5,100	.7
Hardwood-spruce-fir	64,900	8.6
Ash-maple-elm	3,000	.4
Total	161,900	21.5
All types	753,200	100.0

HANCOCK COUNTY, MAINE

Table 4.--Commercial forest area by forest type group and stand-size class, 1947

Stand-size class	Forest type group					All forest types	
	White pine	Spruce-fir	Cedar-tamarack-spruce	Aspen-paper birch	Hardwood		
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Percent</u>
Saw-timber stands:							
Medium and heavy	15,300	48,900	2,200	--	19,100	85,500	11.4
Light	12,600	127,500	23,600	10,200	35,000	208,900	27.7
Pole-timber stands	9,000	147,800	31,200	66,500	91,100	345,600	45.9
Seedling and sapling	--	21,700	19,100	13,600	13,400	67,800	9.0
Poorly stocked stands	--	6,800	8,300	27,000	3,300	45,400	6.0
All stands	36,900	352,700	84,400	117,300	161,900	753,200	100.0
Percent	4.9	46.8	11.2	15.6	21.5	100.0	--

HANCOCK COUNTY, MAINE

Table 5.--Commercial forest area by forest type group and
site class, 1947

Forest type group	Site class			All sites
	Good	Fair	Poor	
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
White pine	--	24,400	12,500	36,900
Spruce-fir	2,200	317,700	32,800	352,700
Cedar-tamarack-spruce	--	69,200	15,200	84,400
Aspen-paper birch	--	91,500	25,800	117,300
Hardwood	2,200	157,100	2,600	161,900
All types	4,400	659,900	88,900	753,200
Percent	0.6	87.6	11.8	100.0

HANCOCK COUNTY, MAINE

Table 6.--Net board-foot volume on commercial forest land by forest type group, stand-size class, and species group, 1947

(Log scale, International 1/4-inch rule)

Stand-size class and species group	Forest type group					All forest types
	White pine	Spruce-fir	Cedar-tamarack-spruce	Aspen-paper birch	Hardwood	
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.
Saw-timber stands:						
Medium and heavy						
Softwood	143,300	331,200	15,300	---	60,600	550,400
Hardwood	8,100	32,600	600	---	82,800	124,100
Total	151,400	363,800	15,900	---	143,400	674,500
Light						
Softwood	55,700	294,900	65,000	5,500	28,300	449,400
Hardwood	---	45,600	8,400	17,500	73,200	144,700
Total	55,700	340,500	73,400	23,000	101,500	594,100
Pole-timber stands						
Softwood	2,800	98,200	24,500	3,100	24,700	153,300
Hardwood	---	2,400	--	5,200	23,900	31,500
Total	2,800	100,600	24,500	8,300	48,600	184,800
Other stands ^{1/}						
Softwood	---	16,700	---	1,900	12,100	30,700
Hardwood	---	--	--	--	4,500	4,500
Total	---	16,700	--	1,900	16,600	35,200
All stands						
Softwood	201,800	741,000	104,800	10,500	125,700	1,183,800
Hardwood	8,100	80,600	9,000	22,700	184,400	304,800
Total	209,900	821,600	113,800	33,200	310,100	1,488,600
Percent	14.1	55.2	7.7	2.2	20.8	100.0

^{1/} Includes seedling and sapling stands, poorly stocked stands, and unstocked areas.

HANCOCK COUNTY, MAINE

Table 7.--Average net board-foot volume per acre on commercial forest land by forest type group, stand-size class, and species group, 1947

(Log scale, International 1/4-inch rule)

Stand-size class and species group	Forest type group					All forest types
	White pine	Spruce- fir	Cedar- tamarack- spruce	Aspen- paper birch	Hardwood	
	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.
Saw-timber stands:						
Medium and heavy						
Softwood	9,370	6,770	6,950	--	3,170	6,440
Hardwood	530	670	270	--	4,340	1,450
Total	9,900	7,440	7,220	--	7,510	7,890
Light						
Softwood	4,420	2,310	2,750	540	810	2,150
Hardwood	--	360	360	1,720	2,090	690
Total	4,420	2,670	3,110	2,260	2,900	2,840
Pole-timber stands						
Softwood	310	660	790	50	270	440
Hardwood	--	20	--	80	260	90
Total	310	680	790	130	530	530
Other stands						
Softwood	--	590	--	50	720	270
Hardwood	--	--	--	--	270	40
Total	--	590	--	50	990	310
All stands						
Softwood	5,470	2,100	1,240	90	780	1,570
Hardwood	220	230	110	190	1,140	400
Total	5,690	2,330	1,350	280	1,920	1,970

HANCOCK COUNTY, MAINE

Table 8.--Net volume in cords of sawlog material on commercial forest land
by forest type group, stand-size class, and species group, 1947

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	White pine	Spruce- fir	Cedar- tamarack- spruce	Aspen- paper birch	Hardwood	
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Saw-timber stands:						
Medium and heavy						
Softwood	293	688	32	---	124	1,137
Hardwood	19	75	2	---	191	287
Total	312	763	34	---	315	1,424
Light						
Softwood	109	614	140	12	59	934
Hardwood	--	104	20	41	172	337
Total	109	718	160	53	231	1,271
Pole-timber stands						
Softwood	6	202	57	6	51	322
Hardwood	---	6	--	12	57	75
Total	6	208	57	18	108	397
Other stands						
Softwood	---	33	---	4	24	61
Hardwood	---	---	---	---	9	9
Total	---	33	---	4	33	70
All stands						
Softwood	408	1,537	229	22	258	2,454
Hardwood	19	185	22	53	429	708
Total	427	1,722	251	75	687	3,162
Percent	13.5	54.5	7.9	2.4	21.7	100.0

HANCOCK COUNTY, MAINE

Table 9.--Average number of cords per acre of sawlog material on commercial forest land by forest type group, stand-size class, and species group, 1947

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	White pine	Spruce- fir	Cedar- tamarack- spruce	Aspen- paper birch	Hardwood	
	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>
Saw-timber stands:						
Medium and heavy						
Softwood	19.2	14.1	14.5	--	6.5	13.3
Hardwood	1.2	1.5	.9	--	10.0	3.4
Total	20.4	15.6	15.4	--	16.5	16.7
Light						
Softwood	8.7	4.8	5.9	1.2	1.7	4.5
Hardwood	--	.8	.8	4.0	4.9	1.6
Total	8.7	5.6	6.7	5.2	6.6	6.1
Pole-timber stands						
Softwood	0.7	1.4	1.8	0.1	0.6	0.9
Hardwood	--	--	--	.2	.6	.2
Total	0.7	1.4	1.8	0.3	1.2	1.1
Other stands						
Softwood	--	1.2	--	0.1	1.4	0.5
Hardwood	--	--	--	--	.5	.1
Total	--	1.2	--	0.1	1.9	0.6
All stands						
Softwood	11.1	4.4	2.7	0.2	1.6	3.3
Hardwood	.5	.5	.3	.4	2.6	.9
Total	11.6	4.9	3.0	0.6	4.2	4.2

HANCOCK COUNTY, MAINE

Table 10.--Net volume in cords of material other than sawlog on commercial
forest land by forest type group, stand-size class,
and species group, 1947

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	White pine	Spruce- fir	Cedar- tamarack- spruce	Aspen- paper birch	Hardwood	
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Saw-timber stands:						
Medium and heavy						
Softwood	123	431	29	---	35	618
Hardwood	39	179	3	---	254	475
Total	162	610	32	---	289	1,093
Light						
Softwood	76	931	172	12	55	1,246
Hardwood	36	471	90	130	443	1,170
Total	112	1,402	262	142	498	2,416
Pole-timber stands						
Softwood	42	947	257	44	101	1,391
Hardwood	4	320	83	622	886	1,915
Total	46	1,267	340	666	987	3,306
Other stands						
Softwood	---	17	31	17	7	72
Hardwood	---	14	4	22	37	77
Total	---	31	35	39	44	149
All stands						
Softwood	241	2,326	489	74	197	3,327
Hardwood	79	984	180	773	1,621	3,637
Total	320	3,310	669	847	1,818	6,964
Percent	4.6	47.5	9.6	12.2	26.1	100.0

HANCOCK COUNTY, MAINE

Table 11.--Average number of cords per acre of material other than sawlog
on commercial forest land by forest type group,
stand-size class, and species group, 1947

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	White pine	Spruce- fir	Cedar- tamarack- spruce	Aspen- paper birch	Hardwood	
	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>
Saw-timber stands:						
Medium and heavy						
Softwood	8.0	8.8	13.2	--	1.8	7.2
Hardwood	2.6	3.7	1.4	--	13.3	5.6
Total	10.6	12.5	14.6	--	15.1	12.8
Light						
Softwood	6.0	7.3	7.3	1.2	1.5	6.0
Hardwood	2.9	3.7	3.8	12.7	12.7	5.6
Total	8.9	11.0	11.1	13.9	14.2	11.6
Pole-timber stands						
Softwood	4.7	6.4	8.2	0.6	1.1	4.0
Hardwood	.4	2.2	2.7	9.4	9.7	5.6
Total	5.1	8.6	10.9	10.0	10.8	9.6
Other stands						
Softwood	--	0.6	1.1	0.5	0.4	0.6
Hardwood	--	.5	.2	.5	2.2	.7
Total	--	1.1	1.3	1.0	2.6	1.3
All stands						
Softwood	6.5	6.6	5.8	0.6	1.2	4.4
Hardwood	2.2	2.8	2.1	6.6	10.0	4.8
Total	8.7	9.4	7.9	7.2	11.2	9.2

HANCOCK COUNTY, MAINE

Table 12.--Net board-foot volume on commercial forest land by species and stand-size class, 1947

(Log scale, International 1/4-inch rule)

Species	Saw- timber stands	Pole- timber stands	Other stands	Total	
	<u>M bd.ft.</u>	<u>M bd.ft.</u>	<u>M bd.ft.</u>	<u>M.bd.ft.</u>	<u>Percent</u>
Softwoods:					
Spruce	383,100	66,900	2,000	452,000	30.3
Fir	75,500	18,300	--	93,800	6.3
Hemlock	106,400	13,200	2,500	122,100	8.2
White pine	361,500	30,000	25,000	416,500	28.0
Cedar	46,400	19,500	700	66,600	4.5
Other softwoods	26,900	5,400	500	32,800	2.2
All softwoods	999,800	153,300	30,700	1,183,800	79.5
Hardwoods:					
Sugar maple	41,100	4,400	--	45,500	3.1
Red maple	50,600	4,600	--	55,200	3.7
Red oak	1,800	4,600	--	6,400	.4
Yellow birch	56,200	1,500	--	57,700	3.9
Paper birch	56,000	5,000	--	61,000	4.1
Beech	40,200	9,800	--	50,000	3.4
Ash	10,500	900	3,000	14,600	1.0
Aspen	10,400	700	--	11,100	.7
Other hardwoods	2,000	--	1,300	3,300	.2
All hardwoods	268,800	31,500	4,500	304,800	20.5
All species	1,268,600	184,800	35,200	1,488,600	100.0
Percent	85.2	12.4	2.4	100.0	--

HANCOCK COUNTY, MAINE

Table 13.--Net volume in cords of all trees on commercial forest land by species and stand-size class, 1947

(Standard cords, including bark)

Species	Saw- timber stands	Pole- timber stands	Other stands	Total	
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>Percent</u>
Softwoods:					
Spruce	1,482	712	10	2,204	21.8
Fir	63	484	24	1,177	11.6
Hemlock	362	99	6	467	4.6
White pine	951	133	64	1,148	11.3
Cedar	376	226	12	614	6.1
Other softwoods	95	59	17	171	1.7
All softwoods	3,935	1,713	133	5,781	57.1
Hardwoods:					
Sugar maple	219	96	2	317	3.1
Red maple	532	436	28	996	9.8
Red oak	13	50	--	63	.6
Yellow birch	388	128	1	517	5.1
Paper birch	525	484	10	1,019	10.1
Beech	382	418	--	800	7.9
Ash	53	48	14	115	1.1
Aspen	96	235	19	350	3.5
Other hardwoods	61	95	12	<u>1/</u> 168	1.7
All hardwoods	2,269	1,990	86	4,345	42.9
All species	6,204	3,703	219	10,126	100.0
Percent	61.2	36.6	2.2	100.0	

1/ Includes 159,000 cords of so-called nonmerchantable species such as: gray birch and pin cherry.

HANCOCK COUNTY, MAINE

Table 14.--Net cubic-foot volume of all trees on commercial forest land by species, tree class, and kind of material, 1947

(Excluding bark)

Species	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	<u>M cu.ft.</u>	<u>M cu.ft.</u>	<u>M cu.ft.</u>	<u>M cu.ft.</u>	<u>M cu.ft.</u>
Softwoods:					
Spruce	73,500	13,400	83,000	2,000	171,900
Fir	15,300	3,500	70,900	2,100	91,800
Hemlock	19,700	3,600	11,100	2,100	36,500
White pine	65,100	9,600	12,900	1,900	89,500
Cedar	12,400	4,600	26,800	4,100	47,900
Other softwoods	5,400	1,200	5,700	1,000	13,300
All softwoods	191,400	35,900	210,400	13,200	450,900
Hardwoods:					
Sugar maple	6,700	3,400	4,900	5,600	20,600
Red maple	8,300	3,900	37,800	14,700	64,700
Red oak	900	700	2,500	--	4,100
Yellow birch	8,600	4,400	9,600	11,000	33,600
Paper birch	9,300	4,000	49,200	3,700	66,200
Beech	7,700	3,300	25,200	15,800	52,000
Ash	2,300	1,100	3,700	400	7,500
Aspen	1,700	800	18,600	1,700	22,800
Other hardwoods	500	300	9,600	500	<u>1/</u> 10,900
All hardwoods	46,000	21,900	161,100	53,400	282,400
All species	237,400	57,800	371,500	66,600	733,300
Percent	32.4	7.9	50.6	9.1	100.0

1/ Includes 10,300,000 cubic feet of so-called nonmerchantable species such as gray birch and pin cherry.

HANCOCK COUNTY, MAINE

Table 15.--Net volume in cords of all trees on commercial forest land by species, tree class, and kind of material, 1947

(Standard cords, including bark)

Species	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Softwoods:					
Spruce	942	172	1,064	26	2,204
Fir	196	45	909	27	1,177
Hemlock	252	46	142	27	467
White pine	835	123	166	24	1,148
Cedar	159	59	344	52	614
Other softwoods	70	15	73	13	171
All softwoods	2,454	460	2,698	169	5,781
Hardwoods:					
Sugar maple	103	52	76	86	317
Red maple	128	60	582	226	996
Red oak	14	11	38	--	63
Yellow birch	132	68	148	169	517
Paper birch	144	61	757	57	1,019
Beech	118	51	388	243	800
Ash	35	17	57	6	115
Aspen	26	12	286	26	350
Other hardwoods	8	5	147	8	168
All hardwoods	708	337	2,479	821	4,345
All species	3,162	797	5,177	990	10,126
Percent	31.2	7.9	51.1	9.8	100.0

HANCOCK COUNTY, MAINE

Table 16.--Net volume in cords of all trees on commercial forest land by stand-size class, tree class, and kind of material, 1947

(Standard cords, including bark)

Stand-size class	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Saw-timber stands:					
Medium and heavy	1,424	307	638	148	2,517
Light	1,271	346	1,719	351	3,687
Pole-timber stands	397	126	2,716	464	3,703
Other stands	70	18	104	27	219
All stands	3,162	797	5,177	990	10,126

HANCOCK COUNTY, MAINE

Table 17.--Net board-foot and cubic-foot volume of all trees on commercial forest land by species group and diameter class, 1947

SOFTWOODS

Diameter class (inches)	Sawlog material (Log scale, Int. 1/4-inch rule)		All material (Excluding bark)	
	M bd.ft.	Percent	M cu.ft.	Percent
6	--	--	111,300	24.7
8	--	--	104,500	23.2
10	303,700	25.7	70,100	15.5
12	253,000	21.4	50,100	11.1
14	198,000	16.7	37,400	8.3
16	158,900	13.4	29,400	6.5
18	82,200	6.9	15,300	3.4
20	68,700	5.8	12,000	2.7
22	39,000	3.3	7,000	1.6
24	44,000	3.7	7,300	1.6
26 and over	36,300	3.1	6,500	1.4
All softwoods	1,183,800	100.0	450,900	100.0
HARDWOODS				
6	--	--	63,300	22.4
8	--	--	66,700	23.5
10	--	--	47,400	16.8
12	79,700	26.2	25,400	9.0
14	64,700	21.2	21,100	7.5
16	44,600	14.6	15,400	5.5
18	41,400	13.6	13,200	4.7
20	23,900	7.8	6,800	2.4
22	3,300	1.1	2,700	1.0
24	19,400	6.4	10,200	3.6
26 and over	27,800	9.1	10,200	3.6
All hardwoods	304,800	100.0	282,400	100.0
All species	1,488,600	--	733,300	--

HANCOCK COUNTY, MAINE

Table 18.--Species composition of each forest type group, expressed in percent of net cubic-foot volume, 1947

Species	Forest type group				
	White pine	Spruce-fir	Cedar-tamarack-spruce	Aspen-paper birch	Hardwood
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Softwoods:					
Spruce	11.8	33.7	11.9	3.2	4.1
Fir	3.3	25.1	15.4	3.9	3.7
Hemlock	2.4	4.4	1.7	.3	3.7
White pine	51.5	3.8	1.9	2.0	.6
Cedar	5.6	5.6	39.4	.9	.1
Other softwoods	3.9	1.3	6.3	1.1	--
All softwoods	78.5	73.9	76.6	11.4	12.2
Hardwoods:					
Sugar maple	--	0.1	--	2.1	10.5
Red maple	6.7	8.9	11.7	20.3	12.8
Red oak	--	.2	--	.8	1.9
Yellow birch	.1	2.4	1.3	3.5	13.9
Paper birch	5.7	9.3	2.3	33.5	9.9
Beech	5.4	1.7	1.0	1.1	32.3
Ash	--	.1	4.4	.8	2.0
Aspen	3.6	1.9	.7	21.1	2.3
Other hardwoods	--	1.5	2.0	5.4	2.2
All hardwoods	21.5	26.1	23.4	88.6	87.8
All species	100.0	100.0	100.0	100.0	100.0

FOREST SURVEY PROCEDURE

These estimates of forest area and timber volume are based upon data obtained from a sampling of the county. The following procedure was used:

Photo interpretation.--A large number of plots (about one to every 295 acres) were distributed regularly over the aerial photographs covering this county. Photo interpreters first determined whether each plot was forest or nonforest. If forest, the stand in which the plot was located was examined by stereoscope and classified as to forest type and stand-size class (based on stand volume and density).

Ground-plot examination.--The next step was to examine on the ground enough 1/5-acre forest plots randomly selected from those previously examined on aerial photos in order to establish a reliable average volume per acre from a tally of trees by species and diameters at breast height. Estimates of cull, site quality, past use, and other items also were recorded from the ground plots. An average of about one ground plot was selected to every 2,620 acres of forest land.

Compilation of data.--Photo-interpretation and field-plot data were entered on punch cards in the Upper Darby office. Tabulations were made from these data, resulting in the set of tables herewith.

ACCURACY OF DATA

The number of observations taken on the aerial photographs and the number of ground plots examined in each stand-size class were designed to yield forest area and volume estimates of the highest practicable degree of sampling accuracy for the personnel and equipment available. Some errors in the forest inventory are inescapable because: (1) area classifications may be imperfect and volume of sample trees is derived from measurements of diameter, height, and form with adjustments for estimated defect; and (2) the estimated total is obtained by "blowing up" a sample.

Errors of the first class include mistakes in measurement and judgment, imperfect volume tables, and possible faulty adjustment for defects. Every effort was made to keep such errors to a minimum and compensating, but the degree to which this may have been attained cannot be measured satisfactorily. Errors of the second class are due to failure of the sample to perfectly represent the whole. Such errors are measurable. The

sampling errors for principal items for the county as a whole are expressed below as percentages of their respective totals:

	<u>Percent</u>
Forest area	<u>+ 1.7</u>
Saw-timber area	<u>+ 8.6</u>
Pole-timber area	<u>+ 10.3</u>
Total board-foot volume	<u>+ 7.8</u>
Board-foot volume in saw-timber stands	<u>+ 12.6</u>
Total cubic-foot volume	<u>+ 3.9</u>
Cubic-foot volume in pole-timber stands	<u>+ 9.8</u>

If no bias and no systematic errors are assumed, it is reasonable to expect that actual areas and volumes will be within the indicated range of reported areas and volumes about two times in three, and within the range of two sampling errors about 19 times in 20. For example, the chances are about two out of three that the forest area would not differ more than 1.7 percent from that reported herein. The chances are about 19 in 20 that the forest area would not differ more than 3.4 percent or twice that for one sampling error. Corresponding statements may be made for each of the other items for which sampling errors are given.

Statistics of forest area by type, stand-size class, etc., reported in the tables herewith are subject to increasing sampling error as the class becomes finer and its numerical magnitude smaller. In general, experience to date indicates the ranges in area sampling error shown below:

<u>Class area in acres</u>	<u>Approximate area sampling error in percent</u>
Less than 50,000:	Variable, usually over 40
50,000 to 100,000:	Ordinarily between 20 and 40
100,000 to 300,000:	Usually between 10 and 20
More than 300,000:	Commonly less than 10, but may be as high as 20

Volume sampling errors are larger (in percentage) than area sampling errors and have a tendency to vary by stand-size class. Sampling errors of board-foot data are usually larger than corresponding errors for cubic-foot data. The percentage additions that should generally be

made to area sampling errors in order to estimate volume sampling errors are shown below:

Stand-size class	Volume sampling error in relation to area sampling error	
	For board feet	For cubic feet
	<u>Percent</u>	<u>Percent</u>
Saw timber:		
Medium and heavy	Add 1	Add 1
Light	Add 2	Add 1
Pole timber	Add 6 to 10	Add 2 to 3

Board-foot and cubic-foot volumes per acre are extremely variable for seedling and sapling and poorly stocked stands. The volume sampling errors for these stand-size classes are erratic and may be from 25 to 100 percent higher than the area sampling errors.

EXPLANATION OF TERMS USED

AREA

Land area.--Includes dry land and land temporarily or partially covered by water, such as marsh land, swamps, and river flood plains, streams, sloughs, estuaries, and canals less than one-eighth of a statute mile in width; and lakes, reservoirs, and ponds having less than 40 acres of area. (See "Areas of the United States, 1940," U. S. Bureau of the Census, page 2.) Does not include water areas larger than those defined above nor deeply indented embayments and sounds and other coastal water behind or sheltered by headlands or islands separated by less than 1 nautical mile of water; and islands having less than 40 acres of area.

Forest area.--Land bearing forest growth or land from which the forest has been removed but which shows evidence of past forest occupancy and which is not now in other use. Except for right of ways of active power lines, highways, roads, and railroads, strips of nonforest land less than 100 feet wide and areas of less than 1 acre surrounded by forest were classified as forest.

Commercial forest area.--Forest land bearing or capable of bearing timber of commercial character and economically available now or prospectively for commercial use and not formally withdrawn from such use.

Noncommercial forest area.--Two classes of forest land are included: (1) reserved productive--forest land bearing or capable of bearing

pole-timber or saw-timber stands of commercial character but formally withdrawn from commercial use for parks, preserves, wilderness areas, and so forth; and (2) nonproductive--other forest land permanently incapable of producing commercial pole-timber or saw-timber stands. The latter areas are either rocky, mountainous, or do not possess the climate and soil qualities essential for the production of commercial timber crops.

Nonforest area.--All land areas other than forest, including the acreage in cultivation and pasture less than 30 percent covered by tree canopy; land enclosed within the right of ways of active power lines, highways, roads, and railroads; abandoned roads where the soil has been removed or the pavement remains; marshes, bare rock, quarries, and gravel pits; water areas such as lakes, reservoirs, and ponds having less than 40 acres of area, and streams, sloughs, estuaries, and canals less than one-eighth mile in width (larger water areas are classified as "inland water" by the Bureau of the Census and are not included within land-area figures); and urban and other residential and industrial areas. Narrow belts of trees such as fence rows and stream margins less than 100 feet in width and small groups of trees less than 1 acre in area that are surrounded by nonforest land are considered nonforest.

FOREST TYPE GROUPS

(Board-foot volume of each species in saw-timber stands and number of stems in other stand-size classes was the basis for forest type classification. Table 3 shows the detailed forest types that are combined in each forest type group. Table 18 gives the species composition of each forest type group, expressed in percent of net cubic-foot volume.)

White pine.--Types included are the white pine, in which white pine comprises 75 percent or more of the stand, and white pine-hardwood, in which white pine makes up 50-74 percent of the stand in mixture with various hardwoods. The principal associates are spruce, red maple, paper birch, northern white-cedar, and beech.

Spruce-fir.--The principal type included is the spruce-fir in which spruce and balsam fir make up 75 percent or more of the stand. A smaller area of spruce-fir-hardwood (spruce and fir comprising 50-74 percent of the stand in mixture with hardwoods) is included. Paper birch and red maple are the principal hardwoods in this type group.

Cedar-tamarack-spruce.--This type is made up principally of northern white-cedar in association with balsam fir, black spruce, red maple, and tamarack.

Aspen-paper birch.--This type occurs as small pure stands of quaking and bigtooth aspen or of paper birch or stands in which aspen and paper

birch predominate in mixture with red maple.

Hardwood.--Hardwoods are predominant in the stands included in this type group. Generally, beech, yellow birch, and sugar maple, singly or in combination, are the principal species. Red maple and paper birch are the primary associates. In some stands, spruce and fir are mixed with the hardwoods.

STAND-SIZE CLASSES

(The minimum area classified according to stand-size was 1 acre.)

Medium and heavy saw-timber stands.--Stands that had a net volume of 5,000 board feet or more per acre.

Light saw-timber stands.--Stands that had a net volume of 1,500 to 4,999 board feet per acre.

Pole-timber stands.--Stands that had a net volume of less than 1,500 board feet per acre and at least 10 percent of the area covered by the crown canopy of pole-timber or larger trees. At least one-half the minimum stocking was in pole-timber trees. These stands generally contained at least 200 cubic feet per acre in trees 5.0 inches d.b.h. and larger.

Seedling and sapling stands.--Stands that did not qualify either as saw timber or pole timber but were well stocked with seedlings and saplings (at least 40 percent of the stand area covered by crown canopy). These stands generally contained at least 300 seedlings and saplings 1.0 to 4.9 inches d.b.h. per acre.

Poorly stocked stands.--Stands that did not qualify as saw timber or pole timber but were at least 10 percent stocked with saw-timber or pole-timber trees or with 10 to 39 percent of the crown canopy in seedlings and saplings.

Unstocked areas.--Stands that did not qualify as saw timber, pole timber, or seedling and sapling and were less than 10 percent stocked.

SITE CLASS

Site class.--Based on the average number of logs produced by mature trees in commercial forest areas. Where mature, dominant, or codominant

trees were present, the following merchantable-height classes, based on 16-foot logs, were used:

Site	Hardwoods	Softwoods
Good	3 or more logs	5 or more logs
Fair	1½ to 3 logs	3 to 5 logs
Poor	8 feet to 1½ logs	8 feet to 3 logs
Nonproductive	(See definition under Area)	

Where no mature trees of the dominant or codominant crown classes were present, site was estimated from the species and growth of immature trees, the depth and type of soil, aspect, soil moisture, and the shrubby and herbaceous ground cover. Poor sites that are incapable of producing pole-timber or saw-timber stands were classed as nonproductive (noncommercial forest area).

VOLUME ESTIMATES

(Volume in trees on areas classified as nonforest is not included; all volumes are net, that is, with defect deducted.)

Board-foot volume.--Includes the sawlog material in saw-timber trees estimated through use of the International 1/4-inch log rule, which closely approximates green lumber tally for square-edged boards. Top diameters vary with the limits of usable sawlog material. Deductions have been made for rot, crook, and other defects.

Cubic-foot volume.--Includes the sound wood, excluding bark, in: (1) the sawlog portion of saw-timber trees, (2) the upper stems of softwood saw-timber trees and the upper stems and limbs of hardwood saw-timber trees to a minimum of 4 inches inside bark, (3) the full stems of pole-timber trees to a minimum of 4 inches inside bark, and (4) the sound wood volume of cull trees. No deductions were made for defects unless they affected the wood structure.

Volume in cords.--This volume was derived from the net cubic-foot volume (excluding bark) by applying a factor of 78 cubic feet per cord for conifers and 65 cubic feet per cord for hardwoods. Although the number of cubic feet per cord varies with the size of material, these converting factors were used for all material in this report. The resulting figures approximate the volume of a standard stacked cord (4 feet by 4 feet by 8 feet), including bark. No deductions were made for defect unless they affected the wood structure.

TREE CLASSES

Saw-timber tree.--A softwood tree at least 9.0 inches d.b.h. (diameter outside bark at $4\frac{1}{2}$ feet above the ground on the upper side of the tree) or a hardwood tree at least 11.0 inches d.b.h., each with a sound log at least 8 feet long and with at least half of the gross volume of the tree in merchantable material.

Pole-timber tree.--A tree that ranged from 5.0 inches d.b.h. up to the minimum saw-timber tree size and that gave promise of becoming a merchantable saw-timber tree.

Cull tree.--A tree that did not qualify as a saw-timber or pole-timber tree because of poor form, limbiness, rot, or other defect.

Tree-diameter class.--Each 2-inch diameter class includes all trees measured in the range from 1.0 inch below the midpoint of the class up to but not including 1.0 inch above the midpoint. For example, the 6-inch class includes all trees whose diameters fall in the range of 5.0 inches up to but not including 7.0 inches.

SPECIES

The various tree species found in this area are listed below. Approved common names 1/ are shown in parenthesis if these differ from the brief name used in the tables. Approved scientific names 1/ are underlined. If two or more species are included under a single name in the tables, the various species are listed or the word "species" appears after the approved scientific name for the genus.

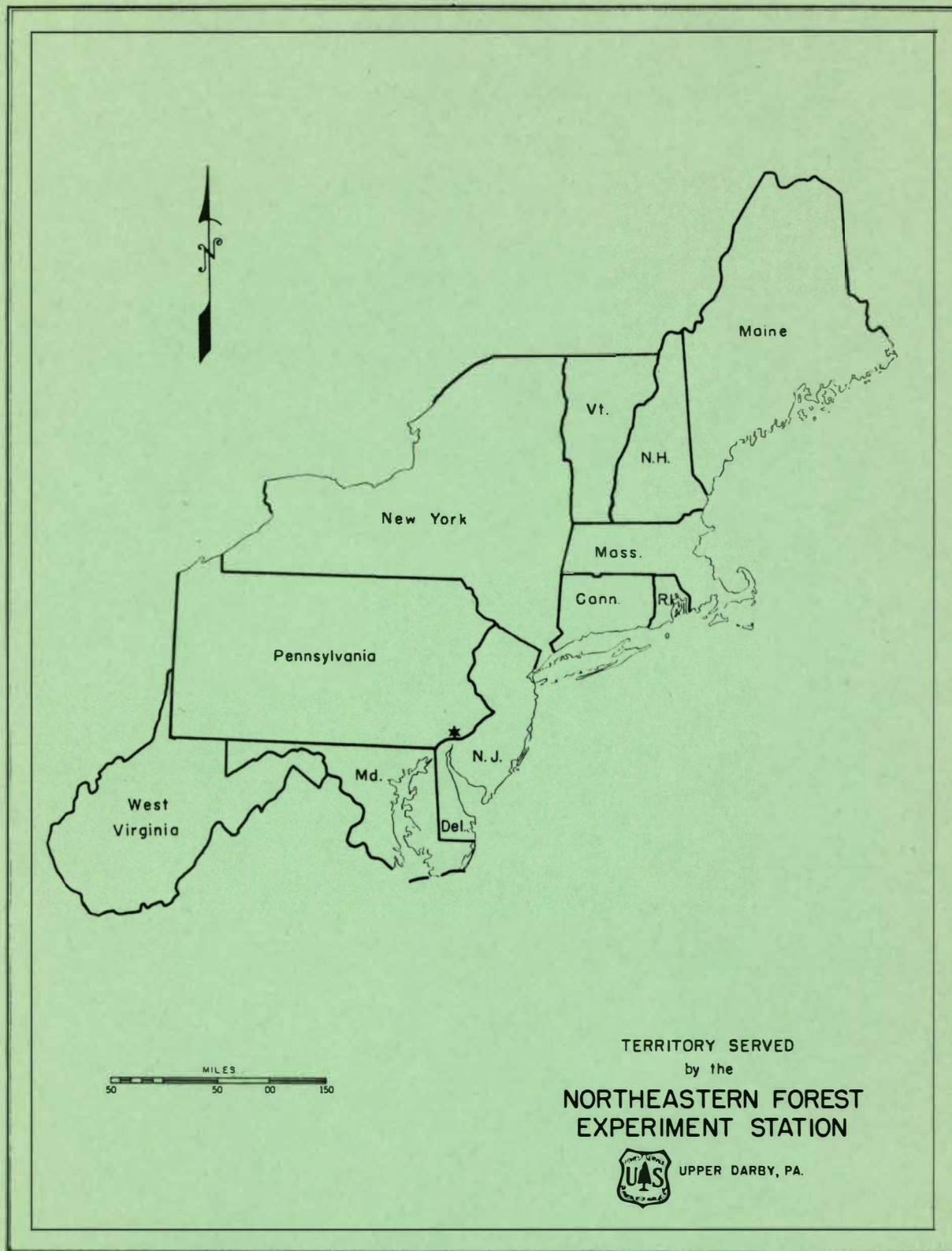
Softwoods

Spruce (Red spruce)	- <u>Picea rubens</u>
(White spruce)	- <u>Picea glauca</u>
(Black spruce)	- <u>Picea mariana</u>
Fir (Balsam fir)	- <u>Abies balsamea</u>
Hemlock (Eastern hemlock)	- <u>Tsuga canadensis</u>
White pine (Eastern white pine)	- <u>Pinus strobus</u>
(Red pine)	- <u>Pinus resinosa</u>
Cedar (Northern white-cedar)	- <u>Thuja occidentalis</u>
Other softwoods (Jack pine)	- <u>Pinus banksiana</u>
(Tamarack)	- <u>Larix laricina</u>

1/ U. S. Forest Service. Check list of the native and naturalized trees of the United States including Alaska. U. S. Dept. Agr. 325 pp. 1944.

Hardwoods

Sugar maple	- <u>Acer saccharophorum</u>
Red maple	- <u>Acer rubrum</u>
Red oak (Northern red oak)	- <u>Quercus borealis</u>
Yellow birch	- <u>Betula lutea</u>
Paper birch	- <u>Betula papyrifera</u>
Beech (American beech)	- <u>Fagus grandifolia</u>
Ash	- <u>Fraxinus</u> species
Aspen (Bigtooth aspen)	- <u>Populus grandidentata</u>
(Quaking aspen)	- <u>Populus tremuloides</u>
Other hardwoods (American basswood)	- <u>Tilia americana</u>
(American elm)	- <u>Ulmus americana</u>
(Gray birch)	- <u>Betula populifolia</u>
(Pin cherry)	- <u>Prunus pennsylvanica</u>



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